

REMARKS

Status of the claims:

With the above amendments, claims 6 and 7 have been canceled and claims 1, 2, and 11 have been amended and claims 15 and 16 have been added. Thus, claims 1-4 and 8-11 and 15-16 are pending and ready for further action on the merits. No new matter has been added by way of the above amendments. The amendment to claims 1 and 2 have support at page 6, lines 19-21. New claims 15 and 16 have support at page 6, lines 9-21. Reconsideration is respectfully requested in light of the following remarks.

Rejections under 35 U.S.C. §112, Second Paragraph

Claims 1-4 and 8-11 have been rejected under 35 U.S.C. §112, second paragraph as being indefinite. The Examiner asserts that claims 1-4 and 8-11 are indefinite because the contact time of the catalyst with the nitrogen compound is unclear because no time duration is claimed. The Examiner further asserts that it is unknown what is the resulting concentration of the nitrogen compound in the catalyst. Applicants submit that one of skill in the art who reads the specification (particularly, page 6, lines 2-21) would recognize that the nitrogen compound is pre-saturated with the catalyst.

Application No.: 02/053,998

for a time period sufficient for the nitrogen compound to adsorb to the catalyst. Applicants also submit that one of skill in the art would recognize that the amount of nitrogen adsorbed to the catalyst must be sufficient for the catalyst to be effective (for example, 0.01% to 1% of nitrogen weight per catalyst as enumerated at page 6, lines 19-21). In light of the above explanation, Applicants submit that the claims can be considered neither vague nor indefinite. The rejection is inapposite. Withdrawal of the rejection is warranted and respectfully requested.

Further, the Examiner says that claim 11 is indefinite because it depends from a canceled claim (i.e., claim 5). Claim 11 has been amended so that it is dependent from only claim 2. Withdrawal of the rejection is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 1, 2, 6, 7, 8-10 and 11 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Apelian '943 (US Patent No. 5,962,943).

Claims 3, 4, 6, 7, and 11 have been rejected under 35 USC §103(a) as being unpatentable over Apelian '943 in view of FR 2,668,251.

These objections are traversed for the following reasons.

Present Invention

The present invention relates to a method of hydrocracking hydrocarbon oils. The method comprises the steps of: pre-contacting a hydrocracking catalyst with a solution containing an organic nitrogen compound in a range of 10 ppm to 100 ppm by nitrogen weight, then contacting a feed oil substantially comprised of hydrocarbon oils and hydrogen with the hydrocracking catalyst that has been contacted with the organic nitrogen compound in order to obtain a hydrocarbon oil with a lower boiling point than that of the feed oil. The concentration of nitrogen in the feed oil is not more than 10 ppm. The organic nitrogen compound is an organic nitrogen compound having a boiling point that is lower than a 50% distillation temperature of the feed oil and is higher than 200°C. As a result of contacting the petroleum fraction as claimed in claim 2 or the organic nitrogen compound as claimed in claim 1 with the hydrocracking catalyst, the hydrocracking catalyst contains 0.01% to 1% by nitrogen weight of the organic nitrogen compound per catalyst weight.

Disclosure of Apelian '943

Apelian '943 discloses that the equilibration of a zeolitic hydrocracking catalyst is accelerated by the addition of nitrogen compounds to the hydrocracker feed during the start of cycle (SOC). Apelian '943 further discloses that the addition of nitrogen compounds reduces the exotherm, and is indicative of a decrease in the hydrogenation activity of the catalyst consequent upon the addition of the nitrogen. The reduced hydrogenation level decreases hydrogen consumption at this point in the cycle so that units that are hydrogen constrained may be operated under more favorable conditions. In addition, Apelian '943 discloses that the attainment of equilibrium or lineout conditions is accelerated and yield benefits, particularly in the production of middle distillates are observed.

Disclosure of FR '951

FR '951 discloses a process for the activation of a hydrocracking catalyst, wherein the catalyst is activated with sulfur and with nitrogen in the hydrocracking zone in the presence of a light petroleum fraction containing sulfur and nitrogen. The process optionally contains additional sulfur and nitrogen compounds. The sulfur and nitrogen content of the

petroleum fraction and if the additional compounds varies depending on whether the catalyst is intended to be pre-sulfurized in the hydrocracking zone (in situ) or outside the hydrocracking zone (ex situ).

Removal of the Rejections over Apelian '943 and Apelian '943 in view of FR '951

The Examiner asserts that Apelian '943 discloses adding a nitrogen-containing compound to a solution containing a hydrocracking catalyst. As nitrogen-containing compounds the Examiner asserts that Apelian '943 discloses pyridine (b.p. 115°C) and quinoline (b.p. 238°C). The Examiner asserts that the amount used is from 1 ppm to 1.0 wt%. Applicants point out that at column 4, lines 47-57 of Apelian '943 discloses many nitrogen containing compounds, most of which do not have boiling points greater than 200°C. Thus, Applicants submit that there is no motivation to select a particular nitrogen-containing compound that has a boiling point of greater than 200°C.

Moreover, Apelian '943 does not disclose or suggest the amount of the nitrogen containing compounds recited in amended claims 1 and 2.

Further, Apelian '943 discloses that the reactor operating temperature is raised at a rate of from 1 to 20, usually 1.5 to 3.0 F/day (corresponding to 170 to 330 C/month) in the process disclosed in Apelian '943. In contrast, the instant invention uses the nitrogen-containing compounds recited in claims 1 and 2, the initial deactivation rate of 0.5°C/month can be achieved. Please see page 17, lines 2-3 of the instant written description. Apelian '943 further does not disclose or suggest any motivation to select the nitrogen-containing compounds as recited in claims 1 and 2, and does not disclose or suggest the above-mentioned effect regarding the initial deactivation rate caused by the usage of such nitrogen-containing compounds.

With respect to the rejection based on Apelian '943 in view of FR '951, Apelian '943 suggests using platinum or palladium as a metal hydrogenation component (See column 3, lines 64-66). One of ordinary skill in the art would recognize that sulfurization is not performed when platinum or palladium is used as a metal hydrogenation component. Accordingly, one of ordinary skill in the art would not be motivated to use the Apelian '943 process which uses platinum or palladium with FR '951, which disclosed a sulfurization process. The rejections

Application No.: 09/763,266

are inapposite. Withdrawal of the rejections is warranted and respectfully requested.

With the above remarks and amendments, it is believed that the claims, as they now stand, define patentable subject matter such that a passage of the instant invention to allowance is warranted. A Notice to that effect is earnestly solicited.

If any questions remain regarding the above matters, please contact Applicant's representative, T. Benjamin Schroeder (Reg. No. 50,990), in the Washington metropolitan area at the phone number listed below.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of one (1) month to February 23, 2003 in which to file a reply to the Office Action. The required fee of \$110.00 is enclosed herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees

Application No.: 01/763,268

required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made



Application No.: 02/763,268

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims have been amended as follows.

1. (Twice Amended) A method of hydrocracking hydrocarbon oils, comprising the steps of:

pre-contacting a hydrocracking catalyst with a solution containing an organic nitrogen compound in a range of 10 ppm to 100 ppm by nitrogen weight; and

contacting a feed oil substantially comprised of hydrocarbon oils and hydrogen with the hydrocracking catalyst that has been contacted with the organic nitrogen compound in order to obtain a hydrocarbon oil with a lower boiling point than that of the feed oil wherein the concentration of nitrogen in the feed oil is not more than 10 ppm;

the organic nitrogen compound being an organic nitrogen compound having a boiling point that is lower than a 50% distillation temperature of the feed oil and that is higher than 200 °C, and wherein, as a result of contacting the organic nitrogen compound with hydrocracking catalyst, the hydrocracking catalyst contains 0.01% to 1% by nitrogen weight of the organic nitrogen compound per catalyst weight.

2. (Amended) A method of hydrocracking hydrocarbon oils derived from petroleum comprising the steps of:

contacting a petroleum fraction containing an organic nitrogen compound in a range of 10 ppm to 100 ppm by nitrogen weight and having a 95% distillation temperature that is lower than the 50% distillation temperature of a feed oil substantially comprised of hydrocarbon oils and that is higher than 200°C with a hydrocracking catalyst wherein the concentration of nitrogen in the feed oil is not more than 10 ppm; and

contacting the feed oil and hydrogen with the hydrocracking catalyst that has been contacted with the petroleum fraction in order to obtain a hydrocarbon oil with a boiling point lower than that of the feed oil, and wherein, as a result of contacting the petroleum fraction with hydrocracking catalyst, the hydrocracking catalyst contains 0.01% to 1% by nitrogen weight of the organic nitrogen compound per catalyst weight.

11. (Amended) The hydrocracking method according to [any one of Claims 2, 4, and 5,] claim 2 wherein the petroleum fraction is no. 11.

Application No.: 02/743,268

Claims 15 and 16 have been added.